



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,723	03/03/2004	Joo Ho Lee	2336-247	2626

7590 03/27/2006
LOWE HAUPTMAN GILMAN & BERNER, LLP
1700 Diagonal Road, Suite 310
Alexandria, VA 22314

EXAMINER

ABRAHAM, FETSUM

ART UNIT PAPER NUMBER

2826

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/790,723	Applicant(s) LEE ET AL.	
	Examiner Fetsum Abraham	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-33 is/are allowed.
- 6) ☒ Claim(s) the rest is/are rejected.
- 7) ☒ Claim(s) 5,6,9,10,23 and 25-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's argument on the restriction sustained by examiner has been acknowledged and processed. The argument based on the examiner's ability to search across multiple classes has nothing to do with the burden imposed on examination if all claims were to be examined. Clearly, experience based capacity to search may be present but burden on examination is understood to be different method of searching for mutually exclusive inventive concepts.

To substantiate the reason, the following important points may be necessary:

1) the process of grinding said device wafer to allow via connectors to be exposed is a specific method that requires concentrated search as compared to the structure's final product by any method application.

2) claims 13,16,20 require specific order of steps that require additional search that imposes examination burden

At least for the above reasons, the restricted methods impose additional examination burden that the structure claims do not. Therefore, the restriction is sustained.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (6,114,191).

The patent discloses a wafer level package in the front page comprising: a device wafer (300) having a semiconductor device (340) that can be classified as a micro device, and interconnect metal elements (338) that can be classified as bonding pads (338) connected to the micro device, which are formed at one surface of the device wafer; via connectors (332) extending from the bonding pads to the other surface of the device wafer; external bonding bumps (333) formed at the other surface of the device wafer and adapted to be connected to the bonding pads through the via connectors, respectively; and a cap structure (360) bonded to one surface of the device wafer through dielectric layer (354) to allow the micro device to be insulated and hermetically sealed.

Clearly, the prior art is similar to the claimed invention both conceptually and physically with the exception of terminologies such as micro device Vs. semiconductor device/pads Vs. interconnect metal/and cap structure Vs. cover wafer/ etc. However, the terminology difference is a matter of different expressions for basically similar elements for one skilled in the art to relate the products since micro devices are semiconductor devices, interconnects are electrical pads and a cap structure is a cover or an encapsulant of semiconductor elements in packaging structures.

Furthermore, the prior art may have used external bump contacts (333) rather than the claimed bonding pads. However, contact terminals in this technology is well known to comprise multiple exchangeable elements such as pads, bumps, ball shaped elements, soldered elements and etc. Therefore, terminal difference alone cannot constitute a patent unless the terminal is an unknown product in the art.

Claims 2-4,7,8,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (6,114,191) in view of Ohara et al (5,668,033).

The primary art discloses all subject matter claimed but may a silicon-based cap having cavity at a portion corresponding the semiconductor device. However, the secondary art discloses the missing element in the front-page figure. Therefore, it would

Art Unit: 2826

have been obvious to one skilled in the art to use a cap with cavity to encapsulate semiconductor elements, since such structures better ventilate devices than those air-tightly sealed devices.

As for claim 4, the silicon cap in the secondary reference is sealed to the wafer by sealant materials (21).

As for claim 7, the sealant material in the secondary reference is resin.

As for claim 8, "**product by process**" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Therefore, the way the product was made does not carry any patentable weight as long as the claims are directed to a device. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

As for claim 24, the concept of the invention is packaging, so far as understood by the examiner. Any semiconductor device including strictly electrical, optical, or a mixture of both can be encapsulated by the prior arts. Therefore, although the prior art do not discuss specific devices in application, it would have been obvious to one skilled in the art to use the package for the claimed microelement since its application is unlimited in relation to semiconductor devices, which the claimed invention is characterized under.

Claims 5,6,9,10,23,25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

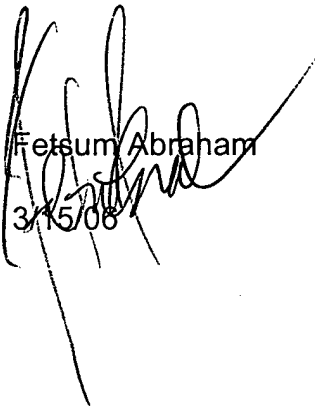
Claims 29-33 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-

Art Unit: 2826

1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.


Fetsum Abraham
3/15/08